Hydroconsult Engineers, Inc.

THE 34TH AMERICA'S CUP

DRAFT - STORMWATER CONTROL PLAN APPROACH

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Prepared for:
San Francisco Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Prepared by:
Hydroconsult Engineers, Inc.
45 Polk, 3rd Floor
San Francisco, CA 94102

Summary - Stormwater Control Plan (SCP) and Post-Construction BMPs

This document provides a brief analysis of post construction BMPs associated with the 34th America's Cup Project (AC34). A separate SCP will be provided to address post construction BMPs associated with the James A. Herman Cruise Terminal Project.

With respect to the AC34, See Table 1, attached, for a summary of the sites and piers were selected for inclusion in this SCP. Additional text is provided below.

An additional stormwater control technical approach for Pier 30-32 during the AC34 event is provided below.

Narrative Text for the Evaluation Table

Stormwater Control Plan and Post-Construction BMPs

One project-wide Stormwater Control Plan (SCP) will be prepared for the AC34 event. The SCP will comply with the San Francisco Stormwater Design Guidelines for new construction and contain post-construction BMPs to reduce and treat the stormwater runoff from these sites, as required and as outlined below.

The SCP typically includes the following elements to comply with the Stormwater Design Guidelines.

- Prepare a site map of existing conditions and evaluate drainage boundaries and flow paths
- Prepare a site map of future conditions and evaluate drainage boundaries and flow paths
- Calculate areas, composite C factor, and runoff for each future drainage management area (DMA)
- Perform a stepwise selection process for choosing which BMPs are most appropriate for each DMA
- Size the BMPs for each DMA and identify the location of each BMP
- Prepare an operations and maintenance plan for the SCP and identify financial responsibility

The AC34 is unique in that all of the facilities proposed are temporary, although permanent improvements will be conducted at Piers 30-32 and Pier 19. Only the new Cruise Terminal at Pier 27 will remain as part of the Port's long-term plan, which is addressed in a separate SCP. In addition, **no new impervious surface is being proposed for AC34**. Decking replacement is proposed at Pier 30-32 and Pier 19 over existing impervious pier surfaces. With the exception of the Cruise Terminal project, no long term changes in use are proposed at this time. Accordingly, none of the AC34 sites

technically require post-construction BMPs pursuant to the SF Stormwater Design Guidelines. However, the Project Sponsor has agreed to provide post construction BMPs at Pier 30-32, given the amount of deck work proposed and the plan to use the pier for team base operations. See description below for additional detail.

Rationale for determining sites/piers to be included in the SCP is presented below and summarized in Table 1:

Pier 80 – Pier 80 is not planned to have permanent improvements and will not be included in the SCP. Should permanent improvements be proposed, a separate long-term development permit will be submitted at a later time, which would include long term BMPs.

Pier 30-32 – The AC34 does not propose adding any new impervious surface at Piers 30-32. In the event that long term permanent improvements are proposed in the future, a separate long-term development permit will be submitted which would include additional post construction BMPs.

That said, post-construction BMPs are being proposed as part of the deck infill/replacement project to provide additional protections to water quality. The Project Sponsor plans to install shallow treatment filters along a significant portion of these piers. The intent would be to maintain the existing grades and install shallow treatment filters at several existing storm drain inlets. The shallow treatment filters are typically granular activated carbon and debris filters with replaceable cartridges. The proposed stormwater control technical approach for Pier 30/32 during the AC34 event is provided in the following section.

Pier 19 – The AC34 project does not propose to add any new permanent facilities to Pier 19; however, some minor deck repair will be completed for the project. This repair work will not result in any new impervious surfaces and therefore is not required to be included in a SCP per the San Francisco Stormwater Guidelines. Should permanent improvements be proposed, a separate long-term development permit will be submitted at a later time to recommend additional post construction BMPs.

Regardless, implementing post-construction BMPs at this site has been evaluated, and found to be technically infeasible for the planned small deck repair/replacement. The planned deck repair/replacement consists of approximately 12,000 square feet. The existing grading and site conditions make it infeasible to add shallow treatment filters. Accordingly, Pier 19 will not be included in the SCP.

Piers 14, 9 and 23 – Work at these piers will not involve any permanent improvements or deck work. Accordingly, these sites will not be included in the SCP. Should permanent improvements be proposed, a separate long-term development permit will be

submitted at a later time, which would include any appropriate post construction BMPs pursuant to San Francisco's Stormwater Design Guidelines.

Pier 27-29 – All work associated with the AC34 on these two piers will be temporary. However, Pier 27 and 29 will have a new building and a new fully landscaped area as part of the long term Cruise Terminal project. A separate SCP and post-construction BMPs for the Cruise Terminal project will be submitted under separate cover.

Aquatic Park, Fort Mason, Crissy Field and the Marina Green – These sites do not include any permanent improvements or proposed impervious surface, and will not be included in the SCP.

Piers 30-32 Americas Cup 34 Stormwater Control Technical Approach

Piers 30-32 will provide Team Base operations for the AC34 event. Piers 30-32 will have significant deck replacement, existing pile rehabilitation and new pile installation work. However, no new impervious area will be created, accordingly, post-construction BMPs would not be required under the San Francisco Stormwater Design Guidelines. However, since this area will be used heavily for Team Base operations, the Project Sponsor has agreed to implement some post-construction BMPs that will be used during the event and will provide a long term benefit.

Existing Conditions:

Stormwater contacting the pier runs via sheet flow or through small thru-deck drains directly to the Bay. The existing pier has thru-deck drains that route stormwater from the surface to the Bay below. No storm drain system is in-place that connects to the combined storm system. The "in-fill" area is a pile supported structural deck that connects Pier 30 to Pier 32. The "in-fill" area is depressed in elevation between the adjacent Pier 30 and Pier 32 grades.

Proposed Conditions:

Pier 30-32 will need deck replacement, existing pile rehabilitation and new pile installation work to support the AC34. However, no new impervious area is being proposed. The pier is quite expansive, covering approximately 13 acres and extends approximately 1,000 feet into the bay.

The infill area will be raised to adjacent grade by a new structural slab constructed on beams. The existing deck surface will remain in-place and structural elements will reside on that surface to support the new structural slab. New piles will be installed to support the new deck load.

New post-construction BMPs for this project are not required since no new impervious area is anticipated. However, shallow treatment filters are being proposed for Pier 30-32 as a cost effective and feasible post-construction BMP benefit of the project.

In determining the appropriate type of post construction controls, several design limitations and site constraints were considered and are summarized below:

- The pier is quite expansive, covering approximately 13 acres and extends approximately 1000 feet into the bay.
- Very little clearance is present below the decking and the Bay water surface.
- Adding pavement or structural concrete to change the surface grading is problematic and requires new structural piers to support the extra weight at a significant cost.
- Penetrations of the existing deck larger than approximately 2 feet by 2 feet can decrease the structural integrity of the deck.
- Introducing low development techniques such as pervious pavements to piers along the waterfront may damage the future structural integrity of the pier.

These considerations make it difficult to both change the existing grade of the deck for surface drainage modification and to install any subdeck gravity drainage storm drain pipes and/or stormwater pumping stations.

Shallow treatment filters

Given the site constraints, the Project Sponsor is proposing to install shallow treatment filters at Pier 30-32. The shallow treatment filters will be placed at most storm drain inlets throughout the 13 acre site. Stormwater will travel through the filters and then travel directly to the Bay. Although this method is not generally a preferred post-construction BMP, significant increase in water quality is expected over the existing condition, since many potential pollutants would be removed with the proposed design. This represents a significant improvement over existing conditions. Operation and maintenance of these units will be designated and ensured through the maintenance program of the SCP.

The existing small thru-deck drains will be sawcut and removed throughout the site. Standard shallow treatment filters will be placed where the untreated thru-deck drains were located and the filter structure will be dowelled into the existing deck. Existing drainage patterns will be retained as well as the existing grading and deck elevations. The treatment filters typically contain granular activated carbon and debris filters with replaceable media.

The final design for Piers 30-32 will be provided in a final SCP for the project.

Pier 30-32 long-term development

Proposed AC34 event post-construction BMPs are not meant to address any future long-term development plans. Should permanent development improvements be proposed in the future, a separate long-term development permit application would be submitted to the RWQCB at a later time, which would include any appropriate post-construction BMPs pursuant to San Francisco's Stormwater Design Guidelines.

TABLE 1

STORM WATER PERMIT EVALUATION
34th AMERICA'S CUP

San Francisco, California

Pier	Summary of Construction Activity	Post-Construction BMP/SCP Required?
Pier 80	Mooring, Floating Docks, Team Base Operations and potential Helicopter Barge.	**No,** No new permanent construction
Pier 30-32	Infill on Deck, Pile rehabilitation/replacement, Mooring and Floating Docks and Team Base Operations	**Yes,** although no new permanent improvements are proposed that would cause increased run off, shallow treatment filters are proposed as part of AC34 activities.
Pier 14 N and S	Moorings and Floating Docks	**No,** No new permanent construction
Pier 9	Moorings and Floating Docks	**No,** No new permanent construction
Pier 19	Floating Docks and on Temporary Pier Event Storage Remove 2,000 sf decking, Repair 10,000 sf decking	**No,** No new permanent construction. No new permanent improvements causing increased run off. No additional impervious surface. Infeasible to add shallow treatment filters on small area.
Pier 23	Moorings, Floating Docks, Temporary Media Operations	**No,** No new permanent construction
Pier 27	Moorings and Floating Docks Pile rehabilitation/replacement, Temporary AC Village	**Yes,** An SCP and post-construction BMPs will be provided by the Port as part of the Cruise Terminal Project. See the separate SCP for the Cruise Terminal.
Pier 29	Moorings and Floating Docks Pile rehabilitation/replacement, Temporary AC Village	**No.** No new permanent construction as part of the America's Cup project. See the separate SCP for the Cruise Terminal project.
Aquatic Park	Moorings and Floating Screen Barge.	**No,** No new permanent construction
Fort Mason & Crissy Fiel	Temporary on pier or on land facilities. No construction proposed.	**No,** No construction proposed
Marina Green	Moorings and Floating Docks. Temporary facilities for AC Village.	**No,** No new permanent construction

Notes:

Note 1: Post Construction BMPs at Pier 30-32 - Shallow treatment filters are proposed for Pier 30-32.

Note 2: See Narrative text attached.